Special Issue

TiAl-Based Alloys and Their Applications

Message from the Guest Editors

As an unique group of lightweight heat-resistant materials, TiAl-based alloys are highly praised for their wonderful properities, which let them replace currently used heavy and expensive nickel-based superalloys and the conventional titanium alloys in some aspects. However, the wide application of TiAl-based alloys is still hindered by their difficult manufacturing and processing, high production cost, low ductility at room temperature, low fracture toughness and oxidation resistance at high temperature, low formability, and current lower operational temperature limit over 750 °C. Intermetallic TiAl-based alloys exhibit the highest potential for near-term application in future aircraft engines though a great deal of research is still required. This Special Issue is dedicated to presenting the current status of knowledge on the correlation between microstructure and properties of TiAl-based alloys and composites produced in different advanced processing technologies.

Guest Editors

Prof. Dr. Wojciech Szkliniarz

Faculty of Materials Engineering, Silesian University of Technology, Katowice, Poland

Prof. Dr. Agnieszka Szkliniarz

Faculty of Materials Engineering, Silesian University of Technology, Katowice, Poland

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Metals
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
metals@mdpi.com

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Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

Editors-in-Chief

Prof. Dr. Hugo F. Lopez
Department of Materials Science and Engineering, College of Engineering & Applied Science, University of Wisconsin-Milwaukee, 3200 N. Cramer Street, Milwaukee, WI 53211, USA

Prof. Dr. Yong Zhang
Beijing Advanced Innovation Center of Materials Genome Engineering, State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, 30 Xueyuan Road, Beijing 100083, China

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